

REMARKS

Claims 1-9 and 24-26 are all the claims pending in the application. Claims 10-22 were withdrawn from consideration pursuant to a restriction requirement, and are canceled herein without prejudice to the filing of a divisional application. This Amendment amends claims 4, adds claims 24-26, cancels claims 10-23, and addresses each point of objection and rejection raised by the Examiner. Favorable reconsideration is respectfully requested.

Applicants thanks the Examiner for initialing the Information Disclosure Statements received February 12, 2004 and November 15, 2004, and for the courtesy extended to Applicants' representative at the interview of March 30, 2005.

Summary of Interview

A personal interview was conducted between Applicants' undersigned representative, Examiner Nguyen, and Examiner Ho on March 30, 2005. No exhibits were presented at the interview beyond the application as filed, the pending claims, and the applied art. Independent claims 1 and 23 were discussed, together with the three references applied in the Office Action of January 4, 2005. No substantive claim amendments were discussed.

Applicants' representative referred to embodiments in the specification to demonstrate examples related to the claimed invention. The substance of the explanation is included below in the section addressing the Examiner's rejections under § 112, first paragraph. Thereafter, the following arguments were made:

- Independent claim 1 is not anticipated by US 2002/0122123 A1 to Kimura ("Kimura '123"), as there is no disclosure of individually modulating the pulse width of a power signal transmitted through each power line. Moreover, the only embodiment in Kimura disclosing subpixels discloses Red-Green-Blue subpixels, whereas the claim recites subpixels that emit substantially the same spectrum of light.
- There would be no motivation to combine Kimura '123 with US Patent 6,611,108 to Kimura ("Kimura '108"). Kimura '123 is directed to detection and management of defective pixels in a scanner. In an embodiment, a light emitting element is included with each pixel to determine whether the photodetecting element of the pixel is defective. The rationale underlying the examiner's express motivations to combine the

references are based on improving a display. However, Kimura '123 is not teaching a display.

Applicants' representative also asked for explanation of the Examiner's rejection of claim 23 based on US 2002/0140642 A1 to Okamoto ("Okamoto"). No particular agreement was reached. The Examiner's Interview Summary (PTOL-413) is accurate.

Editorial Changes to Specification and Drawing

Various paragraphs are amended to correct obvious typographical and spelling errors. No new matter is added.

Paragraph [0037] is amended to identify the publication number of a cited patent application.

Additionally, to clarify operation of the circuit in Figure 17, Applicants propose adding a connection to a negative power supply (e.g., ground) at the bottom of the figure, and a control signal input line tied to the gate of transistor 1750. This feature is described in paragraph [0077]. The need for the negative power line can be understood from the description of the operation of the circuit. For example, the power line (Vdd) that powers second OLED 1720 may be "always on or unmodulated," such that the light emitted by OLED 1720 "is not interrupted when the subpixel is in the ON state." Implicit is a path for current from Vdd through OLED 1720 to a negative power line. Support for adding a connection to the gate of transistor 1750 can be understood from the passage stating that "the state of the subpixel may be changed by applying a signal to the gate of transistor 1750." These additions to the figure are proposed in an effort to make operation of the circuit in FIG. 17 readily apparent to the casual observer. Approval is requested.

Drawing Objections

In accordance with the Examiner's instructions, replacement drawings adding "light arrows" to Figure 6 and Figure 17 are submitted herewith. Withdrawal of the objection to the drawings is requested.

Object and § 112, First Paragraph Rejection - Claims 1 and 23

Claims 1 and 23 are rejected for reciting a “light emitting device.” The Examiner states:

“there are not enough disclosure in the specification or the drawings showing the connections to include a light-emitting device that is not an organic light emitting diode (OLED) or Light emitting Diode for example a three terminals light emitting device like an organic thyristor. A person of ordinary skill in the art at the time the invention was made would not be able to make use of the invention of claim 1 or 23 and apply those inventions to light emitting device that is not an organic light emitting diodes or regular light emitting diode.”

The specification of an application need not present every embodiment or permutation of an invention, and claims are not limited to preferred embodiments. All that is necessary is that one skilled in the art be able to practice the claimed invention, given the level of knowledge and skill in the art. MPEP § 2164.08.

Independent claims 1 and 23 describe embodiments of the invention in which the power to each subpixel of a plurality of bistable subpixels is individually modulated/controlled. This enables each subpixel to be bistable, but at the same time, to emit a different quantity of light. For example, as described in paragraph [0072] of the specification, the respective power lines for each subpixel may provide a different amount of energy. This may be achieved in a number of different ways, such as providing a different voltage, or by providing a same peak voltage but for a different percentage of the time.

This system enables the pixels to provide grey scale without the need for complex addressing circuitry such as that required to increase a frequency of an addressing signal that controls a subpixel. *See, e.g.*, paragraph [0071].

To demonstrate a utility of this scheme, consider a pixel comprising four subpixels, respectively powered by power signals Vdd1, Vdd2, Vdd3, and Vdd4. In an example described in paragraph [0073], Vdd1 may provide power all of the time, Vdd2 may provide power 50% of the time, Vdd3 may provide power 25% of the time, and Vdd1 may provide power 12.5% of the time. The cycling of the power signals does not change the ON or OFF state of the subpixel. These same power lines may also provide power to corresponding subpixels in other pixels.

This power scheme enables simple addressing of each pixel, providing bistable grey scale without requiring complex circuitry to modify the addressing data. For instance, if the example pixel with four-subpixel is to provide four-bit gray scale (16-levels), bistable gray scale can be provided by simply assigning the highest-order bit to the subpixel receiving power from Vdd1, assigning the next highest-order bit to the subpixel receiving power to Vdd1, and so on.

The application as filed included claims reciting “light emitting device,” and as such, were not expressly limited to OLEDs. Someone of ordinary skill would be able to fabricate devices with light emitting elements other than OLEDs as described in these claims. Reconsideration and withdrawal of the objection and § 112, first paragraph, rejection are requested.

Objection - Claim 4

Claim 4 is amended to depend from claim 3, thereby providing antecedent basis “the second light emitting device.”

Objection - Claim 23

Claim 23 is objected to “since the specification or the drawing fails to clearly show this invention.” The Examiner asks whether a drawing can be shown that is generic to both claim 3 of species I and claim 18 of species III.

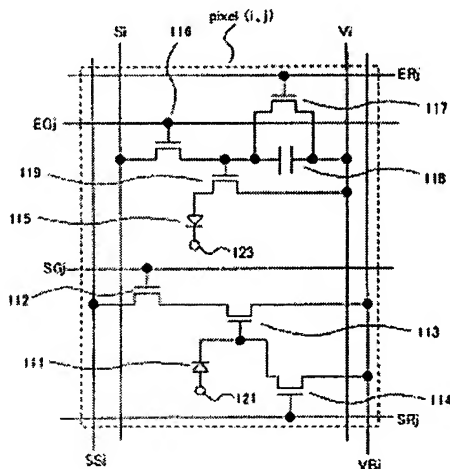
Applicant is unaware of any provision in the rules requiring a single drawing to show every aspect of the claims. The original Election of Species requirement in the Action of October 1, 2004 was not based upon figures, but rather, was based upon aspects of the claims. However, as an example of passages supporting the features of the cited claims, Applicants cite the combination of paragraphs [0072] and [0073], describing an arrangements for powering subpixels providing a different amount of energy to each subpixel such as by modulation, with paragraph [0077], describing an example circuit of a subpixel in which the power to OLED 1710 may be modulated. Reconsideration and withdrawal of objection to claim 23 are requested.

§ 102(e) Rejection - Claims 1, 2, and 9

Claims 1, 2, and 9 are rejected under 35 U.S.C. § 102(e) as being anticipated by Kimura ‘123”.

As mentioned above, claims 1, 2, and 9 are not anticipated by Kimura '123, as there is no disclosure of individually modulating the pulse width of a power signal transmitted through each power line. Moreover, the only embodiment in Kimura disclosing subpixels discloses Red-Green-Blue subpixels (*see* paragraphs [0083], [0084]), whereas claim 1 recites subpixels that emit substantially the same spectrum of light.

Figure 8 of Kimura '123 illustrates an example pixel:

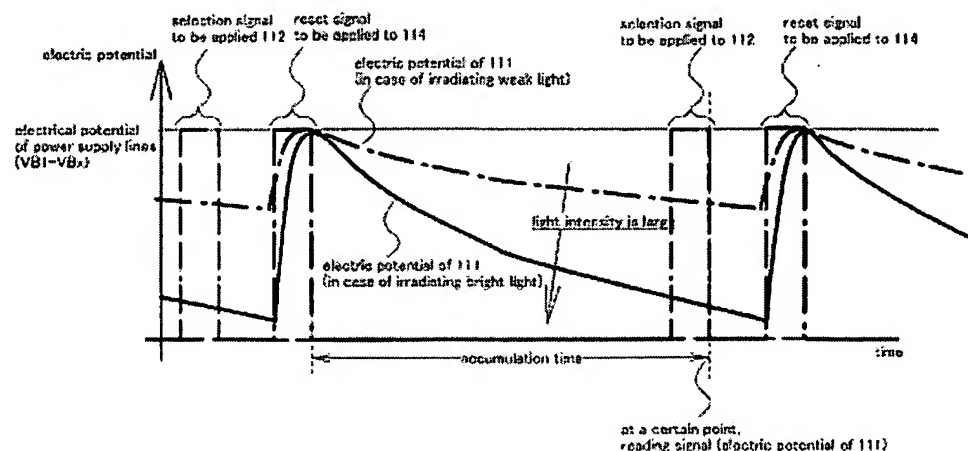


A description of this figure can be found in paragraphs [0118] to [0132]. The lines are described as follows: resetting signal line ER, selecting signal line EG, sensor selecting signal lines SG, sensor resetting signal lines SR, sensor signal output line SS, source signal line S, power supplying line V, and sensor power supply lines VB.

Photodiode 111 (sensor) is connected to a power supply reference line 121. While not described in the context of Figure 8, power supply reference line 121 is described elsewhere in the disclosure as having a potential of 0V. *See* paragraphs [0137] and [0141]. Light emitting element 115 is tied line 123, which is not described.

There is no disclosure of modulating any of the plural power supply lines in Kimura '123. At the Interview, the Examiner suggested that Figure 18 (adjacent) shows modulation of a pulse width of a power signal transmitted through a power line.

However, in Figure 18 of Kimura '123 (below), power supply line VB is clearly illustrated as having a constant voltage, with only selection signals (112, 114) being modulated. Further, the potential across photodiode 111 (sensor) fluctuates not because of



a modulation of the power lines, but in response to reading a black calibration sheet after the pixel is reset. *See, e.g.*, paragraphs [0162] to [0167].

Reconsideration and withdrawal of the § 102(e) rejection are requested.

§ 102(e) Rejection - Claim 23

Claim 23 is rejected under 35 U.S.C. § 102(e) as being anticipated by Okamoto.

Applicants respectfully disagree with the Examiner's characterization of Vd in Figure 1 as a power line. Okamoto describes Vref in FIG. 1 as a "power line" (*see, e.g.*, paragraph [0049]), but describes Vd as the potential of a data line 2 (*i.e.*, a data signal line), output by the column address decoder (*see* paragraph [0048]). As another example of Okamoto explicitly distinguishing addressing signal lines from power lines, compare Okamoto's use of "power lines" in claim 6 with the recitation of data signal and select signal lines in claim 19. Characterizing Vd as a power line is inconsistent with the plain meaning of "power line," as demonstrated by usage of "power line" in both Okamoto and in the present application.

In any case, to expedite prosecution, Applicants have cancelled claim 23.

§ 103(a) Rejection - Claims 3, 4, and 5

Claims 3, 4, and 5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kimura '123 in view of Kimura '108.

As mentioned above, Kimura '123 is directed to detection and management of defective pixels in a scanner. *See* Kimura '123 paragraphs [0004] to [0037]. In an embodiment, a light emitting element is included with each pixel to determine whether the photodetecting element of the pixel is defective. *See* Kimura '123 paragraphs [0118] to [0132].

As reason to combine the references, the Examiner states:

"The rationale is as the following: a person skilled in the art would have been motivated to make the display look normal all of the time as suggested by Kimura 108 in his abstract."

Kimura '123 is not teaching a display. Somehow converting the scanner of Kimura '123 into a display would render it useless for its intended purpose. Reconsideration and withdrawal of the § 103(a) rejection are requested.

§ 103(a) Rejection - Claims 6, 7, and 8

Claims 6, 7, and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kimura '123 in view of Kimura '108. Again, Applicants submit there is no motivation to combine. The light emitting element 115 in the scanner pixel of Kimura '123 provides light to photoelectric conversion element 111. The light emitting element 115 is used to test whether a pixel is defective as an alternative to testing the pixel with a white or a black calibration sheet. *See, e.g.*, Kimura '123 paragraphs [0061], [0062]. If a defective pixel is found, the coordinate of the pixel is stored. *See* Kimura '123 paragraph [0093]. To correct scanned images, an image repairing circuit is used to set the image signal of the defective pixel based on image signals of adjacent pixels. *See id.*

Neither Kimura '123 nor Kimura '108 offers any motivation to modify Kimura '123 to modulate the power lines to the subpixels. Moreover, using the light emitting elements 115 as a substitute for a white calibration sheet does not suggest that there would be any advantage to one subpixel receiving power for a different percentage of time than another subpixel, as described in claims 6-8. Reconsideration and withdrawal of the § 103(a) rejection are requested.

New Claims

Claims 24-26 are added. Consideration on the merits is requested.

Conclusion

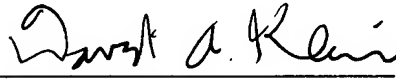
In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited.

Applicants authorize the Commissioner to charge any fees determined to be due with the exception of the issue fee and to credit any overpayment to Deposit Account No. 11-0600.

The Examiner is invited to contact the undersigned at (202) 220-4209 to discuss any matter concerning this application.

Respectfully submitted,
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Amendments to the Drawings:

The attached sheets of drawings include changes to Figs. 6 and 17. These sheets, which include Figs. 6 and 17, replace the original sheets of Figs. 6 and 17. In Figs. 6 and 17, “light arrows” are added, as requested by the Examiner.

Additionally, as explained on below, Applicants have amended Figure 17 to clarify operation of the circuit in Figure 17.

Attachment:

Annotated Sheets Showing Changes

Replacement Sheets



Annotated Sheet Showing Changes
Serial No. 10/607,138 Filed: June 27, 2003
HACK et al. Atty Dkt No.: 10020/28501
Art Unit: 2818 Ex.: T.T. Nguyen

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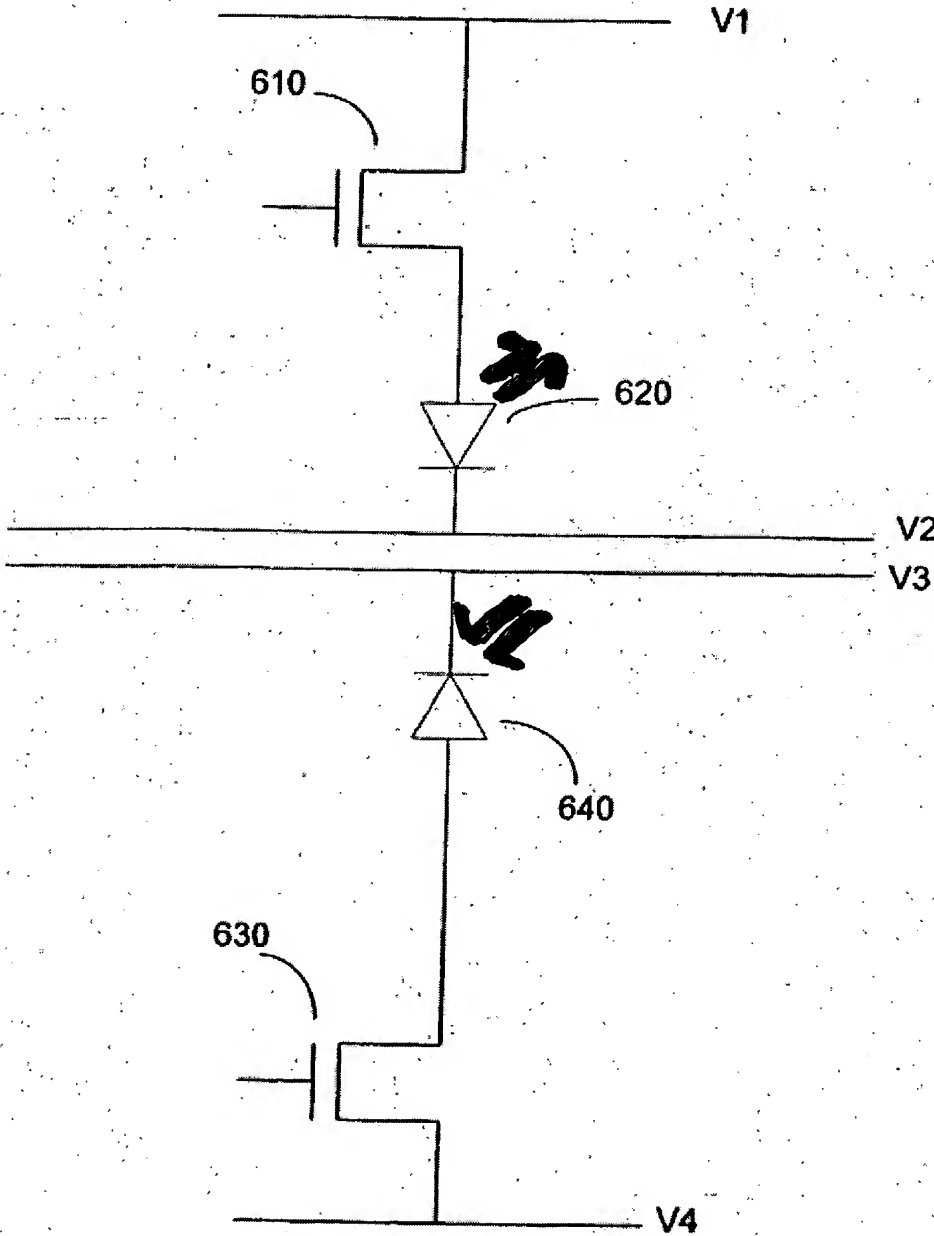


FIG. 6

